

**CLAIMS**

1. A method for treatment of an apoptosis-related disease in a subject comprising administering to said subject a therapeutically effective amount of an inhibitor  
5 of the MKLP1 polypeptide, in a dosage sufficient to inhibit MKLP1 so as to thereby treat the subject.
2. A method according to claim 1 wherein the inhibitor is administered in conjunction with a chemotherapeutic agent.
- 10 3. A method according to claim 1 wherein the inhibitor is an antibody.
4. A method according to claim 1 wherein the inhibitor is an AS fragment comprising consecutive nucleotides having the sequence set forth in SEQ ID  
15 NO:3.
5. A method according to claim 1 wherein the inhibitor is an siRNA comprising consecutive nucleotides having the sequence set forth in SEQ ID NO:4.
- 20 6. A method according to claim 1 wherein the apoptosis-related disease is a cancer.
7. A method for potentiating a chemotherapeutic treatment of an apoptosis-related disease in a subject comprising administering to said subject a  
25 therapeutically effective amount of an inhibitor of the human MKLP1 polypeptide in conjunction with a chemotherapeutic agent.
8. A method according to claim 7 wherein the inhibitor is an antibody.
- 30 9. A method according to claim 7 wherein the inhibitor is an AS fragment comprising consecutive nucleotides having the sequence set forth in SEQ ID NO:3.

10. A method according to claim 7 wherein the inhibitor is an siRNA comprising consecutive nucleotides having the sequence set forth in SEQ ID NO:4.
31. A method according to claim 7 wherein the apoptosis-related disease is a cancer.
12. An antisense oligonucleotide capable of inhibiting the expression of the MKLP1 polypeptide, having the sequence set forth in SEQ ID NO:3.
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13. An siRNA capable of inhibiting the expression of the MKLP1 polypeptide, having the sequence set forth in SEQ ID NO:4.
14. An expression vector comprising a nucleic acid molecule encoding the  
15 antisense oligonucleotide of claim 12 or the siRNA of claim 13.
15. A process for determining the susceptibility of a subject to a chemotherapeutic treatment of an apoptosis-related disease comprising:
  - (a) providing the average, normal level of the MKLP1  
20 polypeptide in the cells of healthy individuals;
  - (b) determining the level of the MKLP1 polypeptide in said subject;
  - (c) comparing the levels obtained in (a) and (b) above, a low  
25 level of MKLP1 polypeptide in said subject as compared to the level in healthy subjects indicating a susceptibility of said subject to a chemotherapeutic treatment of said apoptosis-related disease.
16. A process for determining the susceptibility of a subject to a chemotherapeutic  
30 treatment of an apoptosis-related disease comprising:
  - (a) providing the average, normal level of mRNA encoding the MKLP1 polypeptide in the cells of healthy subjects;

- (b) determining the level of mRNA encoding the MKLP1 polypeptide in said subject;
  - (c) comparing the levels obtained in (a) and (b) above, a low level of mRNA encoding MKLP1 in said subject as compared to the level in healthy subjects indicating a susceptibility of said subject to a chemotherapeutic treatment of said apoptosis-related disease.
17. A process for determining the efficacy of a chemotherapeutic treatment administered to a subject comprising:
- (a) determining the level of the MKLP1 polypeptide in the subject prior to a treatment;
  - (b) determining the level of the MKLP1 polypeptide in the subject after the treatment;
  - (c) comparing the levels obtained in (a) and (b) above, a high level of MKLP1 polypeptide prior to the treatment as compared to the level after the treatment indicating efficacy of the treatment.
18. A process for determining the efficacy of a chemotherapeutic treatment administered to a subject comprising:
- (a) determining the level of the MKLP1 mRNA in the subject prior to a treatment;
  - (b) determining the level of the MKLP1 mRNA in the subject after the treatment;
  - (c) comparing the levels obtained in (a) and (b) above, a high level of MKLP1 mRNA prior to the treatment as compared to the level after the treatment indicating efficacy of the treatment.
19. A process of diagnosing a cancer in a subject comprising:

- (a) providing the average, normal level of the MKLP1 polypeptide in the cells of healthy subjects;
  - (b) determining the level of the polypeptide in said subject;
  - (c) comparing the levels obtained in (a) and (b) above, wherein  
5 a high level of the MKLP1 polypeptide in said subject as compared to the level in healthy subjects is indicative of a cancer.
20. A process of diagnosing a cancer in a subject comprising:
- 10 (a) providing the average, normal level of a polynucleotide encoding the MKLP1 polypeptide in the cells of healthy subjects;
  - (b) determining the level of the polynucleotide in said subject;
  - (c) comparing the levels obtained in (a) and (b) above, wherein  
15 a high level of the polynucleotide in said subject as compared to the level in healthy subjects is indicative of a cancer.
21. A process for obtaining a compound which modulates apoptosis in a cell  
20 comprising:
- (a) providing cells which express the human MKLP1 polypeptide;
  - (b) contacting said cells with said compound; and
  - (c) determining the ability of said compound to modulate  
25 apoptosis in the cells.
22. A process according to claim 21 comprising:
- (a) providing test cells and control cells which express the human MKLP1 polypeptide at a level at which approximately  
30 50% of the cells undergo apoptosis in the presence of an apoptosis-stimulating agent;
  - (b) contacting said test cells with said compound;

- (c) treating said cells in conjunction with step (b) with an amount of apoptosis-stimulating agent capable of causing apoptosis in the control cell; and
  - (d) determining the ability of said compound to modulate apoptosis in the test cell.
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23. A process for obtaining a compound which promotes apoptosis in a cell comprising:
- (a) providing a test cell which expresses the human MKLP1 polypeptide and a control cell which does not express the human MKLP1 polypeptide;
  - (b) contacting said cells with said compound;
  - (c) treating said cells in conjunction with step (b) with an amount of apoptosis-stimulating agent capable of causing apoptosis in the control cell but not in the test cell in the absence of said compound; and
  - (d) determining the ability of said compound to promote apoptosis in the test cell.
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24. A process for obtaining a compound which modulates apoptosis through the human MKLP1 polypeptide comprising:
- (a) measuring the activity of the human MKLP1 polypeptide, or a fragment thereof having viability activity,
  - (b) contacting said polypeptide or fragment with said compound; and
  - (c) determining whether the activity of said polypeptide or fragment is modulated by said compound.
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25. A process for obtaining a compound which modulates apoptosis through the human MKLP1 polypeptide comprising:
- (a) measuring the binding of the human MKLP1 polypeptide, or a fragment thereof having viability activity, to a species to
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which the human MKLP1 polypeptide interacts specifically *in vivo* to produce an anti-apoptotic effect;

- (b) contacting said polypeptide or fragment with said compound;  
and

- 5 determining whether the activity of said polypeptide or fragment is affected by said compound.